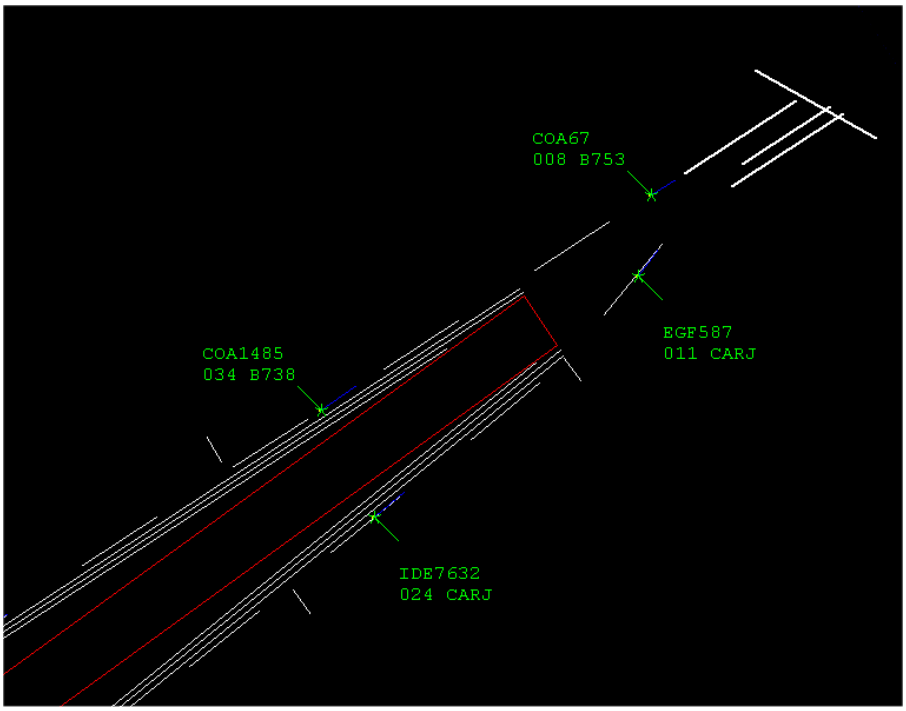
Precision Runway Monitor Simulator



Software Designed and Written by:
Duane A. Duke
AMI-800

Simulation Designed by:
Clint Windom
AMA-530

Support and Direction:
Robert Enos
AMI-800

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1. Overview

With today's crowded airports there is a need for new technologies and procedures to more efficiently use the limited available runway space. Precision Runway Monitor (PRM) was designed to do just that by decreasing some separation minimums on the final approach course. This allows a greater number of aircraft to be safely placed in proximity to each other and ensure maximum utilization of runway space.

As with any new technology, training must be provided before it can be safely used. The PRM Simulator provides this training. The simulator display is designed to look and respond like the PRM system the controller will work with in the field. Scenarios are designed to be both realistic and flexible. New scenarios may be created by the user with the OpenCreate scenario generation software.

2. Log on the system:

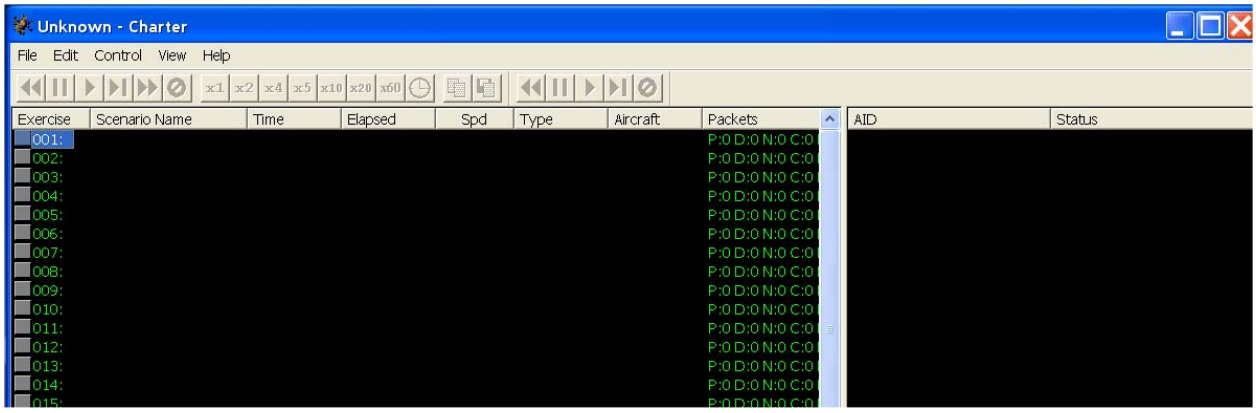
Once you have powered up the machine you will need to log onto the operating system. Pressing "Control", "Alt", and "Delete" at the same time will display a window which will ask for User Name and Password. The User Name is preset to PRM. No password has been specified so simply press Enter to go past this window.

3. Loading/Running the Software

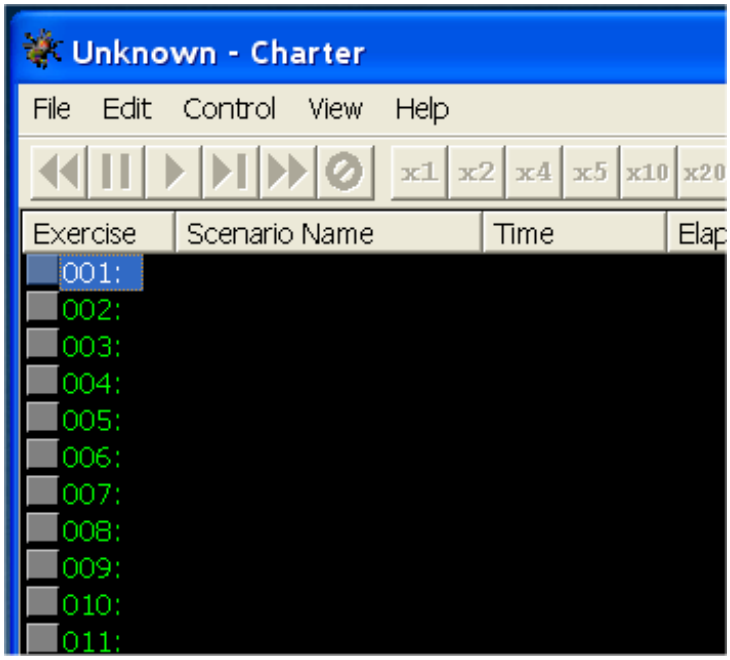
a. Start Charter

The simulation engine that actually makes the aircraft fly is called "Charter". This application will only run on one station.

The first step in bringing up the PRM Simulator is to start Charter by double-clicking on the "Charter SimEngine" icon. This icon will only be located on the Master system.



Once Charter is open, you have the ability to load a single or dual scenario. If a dual scenario is desired, ensure that Exercise 001 has been selected (highlighted in blue), then select FILE, OPEN, and select the desired file. If single scenarios are to be opened on two separate machines, select EXERCISE 1, choose the single scenario for system 1, then select EXERCISE 2, and choose the single scenario for system 2.



After selecting the desired scenarios, minimize the program.

c. Starting Advise (Talking Software)

Go to each controller workstation and click on the icon labeled as ADVISE and minimize.

d. Starting PRM

Go to each controller workstation and click on the icon labeled as PRMCS. There are two different icons, one for dual scenarios and one for single scenarios. Choose the desired icon.

e. Starting Pilot

Go to each pilot workstation and click on the icon labeled as PILOT. There are two different icons, one for dual scenarios and one for single scenarios. Choose the desired icon.

4. PRM Controller Display/Commands

a. PRM Drop Down Menus

1. File: This has only 2 options

- Reset Connection: This will cause the PRM Display to attempt to reset connection with the Charter SimEngine. This will not restart the scenario.
- Exit: This will close the PRM Display.

2. Setup: This offers you 5 options.

- Cursor Size: Allows you to choose the size of the on-screen cursor.
- History Size: Allows you to choose the size of the history trail behind the targets on the display.
- Position: Allows you to select whether a controller or pilot will be using the display. There is no on-screen indication if Controller is selected. If Pilot is selected the word "PILOT" will appear in red letters at the bottom of the display. You can only make control entries for aircraft while in the pilot mode.
- Map Line Width: Allows you to double the width of all map lines on the display.
- Keyboard: Allows you to choose which type of keyboard you will be using. Normally, the Controller will use the ARTS keyboard while the Pilot will use the Standard PC keyboard.

3. Help: Gives credit for the creation of this fine product.

b. PRM Commands: The following commands may be used while a scenario is running. Either keyboard may be used to enter the commands except when entering a data block direction. Then you must use the keyboard that is selected in the drop-down menu at the top of the PRM display.

Command Name	Keyboard Entry	Range
Projected Track Intensity	VI (n)	N = 1 - 4
Range Rings Intensity	RI (n)	N = 1 - 4
Map Intensity	MI (n)	N = 1 - 4
Centerline Deviation Lines Intensity	CI (n)	N = 1 - 4
Data Block Intensity	DI (n)	N = 1 - 4
Text Intensity	TI (n)	N = 1 - 4
Data Block Character Size	CS (n)	N = 1 - 4
Data Block Leader Line		
Auto Offset Toggle On/Off *	[F7] O	n/a
Leader Line Angle	[F7] L (n) (slew)	N = 1 - 9 except 5
Leader Line Length	LL (n)	N = 1 - 8
History Trail Control	HT (n)	N = 0 - 16
Move Status Area	[F7] ST (slew)	n/a
Move Coast List	[F7] TC (slew)n/a	
Move System Data Area	[F7] S (slew)	n/a
Move Preview Area	[F7] P (slew)	n/a
Set Barometric Pressure	[F7] S (space) (n)	N = 2700 - 3400
Set Time	[F7] S (space) (n)	N = (6 digits)
Text Size	TS (n)	N = 1 - 3
Set System Date	DATE_(ddmmmyy)	n/a
Toggle Status Area Display	ST	n/a
Toggle Parallel Line	PL	n/a
Range Ring Control	RR (n)	N = 0 - 15
Alert Suppression on specific track	F11 slew	n/a
Save Controller Setup	CSAV_(Name)	n/a
Delete Controller Setup	DCS_(Name)	n/a
List Setups	LCS	n/a
Restore Setup	CRES_(name)	25 Names Maximum
Restore Default Setup	CDEF	n/a
Runway Configuration	(RW#) A	n/a
Silence Alarm System*	SSYS	n/a
Test Voice Alert	TALK	n/a
Operational Backup*	OP (n)	N = 15 - 32
Display Stretch	AR (n)	N = 1 - 4
Track Filter Select	(RW#) B	n/a
Center Around Cursor	OC	n/a
Center Around Antenna	OA	n/a
Set Display Size	ZR (n)	N = 2 - 32 Even values only

*The highlighted commands are for purposes of familiarity only.

5. Pilot Commands:

Altitude *Altitude*	Replaces the Assigned Altitude for an aircraft.
Approach Approach (Transition)	Press the Approach button and select from the list of valid approaches built for the destination airport. If Transitions exist for that Approach, a cascading menu will be displayed showing the Transitions. To fly one of the Transition simply select it from the list, otherwise just the Approach is flown.
Beacon I	Causes an aircraft to ident.
Beacon *Beacon*	Replaces the existing beacon code for an aircraft.
Cancel_Flight	Removes an aircraft from the simulation.
Heading *Heading*	Causes an aircraft to turn to the Assigned Heading. Heading: Range 0 to 360
Heading Left *Heading*	Causes an aircraft to turn left to the Assigned Heading. Heading: Range 0 to 360
Heading Right *Heading*	Causes an aircraft to turn right to the Assigned Heading. Heading: Range 0 to 360.
Heading *number of degrees* **Left**	Causes an aircraft to turn left heading number of degrees specified. Heading: Range 0 to 360.
Heading *number of degrees* **Right**	Causes an aircraft to turn right heading number of degrees specified. Heading: Range 0 to 360.
Route *FP*	Changes the filed flight plan based on the route described in parameter FP. The parameter *FP* must be in FDEP format.
Speed *Speed*	Sets the Assigned Speed of an aircraft to the specified *speed*. Speed: Must fall into the range valid for this aircraft.
Speed Increase *number of knots*	Adds the specified *speed* to the Assigned Speed of an aircraft. Speed: Must fall into the range valid for this aircraft.
Speed Decrease *number of knots*	Subtracts the specified *speed* from the Assigned Speed of an aircraft. Speed: Must fall into the range valid for this aircraft.

➢ Mouse Functions

The mouse has a left and a right button. Both buttons have been programmed for use with the Pilot software.

Button	Type	Ctrl Pressed	Function
Left	Single	No	The Left mouse button has several functions. It is mainly used to select an object. These objects can be a data block, target, list elements, a new center, etc.
Left	Double	No	Displays the route of an aircraft.
Right	Single	No	The Right mouse button has two functions; data block offset or brings up the Cascade Menus if enabled.